Air Pollution Indicator Lab Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lichen: a symbiotic association between fungus and algae. They are classified as fungi since the fungus part of the organism provides the structure and surround the algal part. Lichen are extremely slow-growing and can live as long as 4500 years. They can withstand temperature extremes, drought and flood conditions, and lack of nutrients. They cannot tolerate polluted air!

They have no roots, so all of their water and nutrient absorption is through the atmosphere. They are especially sensitive to heavy metal fallout (cadmium, copper, lead, nickel, and zinc) from products of combustion from industrial or vehicular exhaust.

In this lab, you’ll be experimenting to see what sort of pollutants are absorbed by the lichen.

Materials:

* Hole punch
* Lichens
* Test tubes
* Small beakers
* Strainer
* Glass stirrers
* Cadmium Chloride
* Lead Chloride
* Lithium Chloride
* Manganese Chloride
* Sodium Chloride
* Zinc Chloride
* Distilled Water
* Test Tube Rack

Procedure:

1. Punch out disks of the lichen with a paper hole punch. You will need twenty disks of the same size. Try to get twenty complete circles.
2. Drop the lichen disks into enough methylene blue solution to cover the disks. Force the disks down under the surface of the methylene blue until they are thoroughly wet. Leave the disks in the dye for 30 minutes.
3. Remove the disks from the dye by pouring the lichen disk/methylene blue mixture through a strainer. Rinse the lichen disks with distilled water. Store the disks until the next day.
4. Each group will test 3 of the chemical solutions plus distilled water. Measure out 10 ml of each solution into a clean test tube.
5. Add five disks to each test tube and allow them to soak in the metal solution or distilled water for 30 minutes. Gently shake the test tubes every 5 to 10 minutes.
6. Observe the color of the solutions during the 30 minute leaching process.
7. At the end of the 30 minutes, shake the tubes well and then compare the intensity of the blue color of each solution by lining them up from lightest to darkest.

Observations:

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| Lightest |
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|  |
|  |
|  |
| Darkest |

Conclusions: